

WHAT IS CLAIMED IS:

1. A driving device which supplies a current to a plurality of current-driven optical elements to drive the optical elements, comprising at least:

5 a driving current supply circuit which supplies a driving current to said each optical element for a predetermined period; and

a control voltage applying circuit which applies at least a charge voltage having a voltage value
10 corresponding to a voltage to be applied to said each optical element using the driving current, before the driving current is supplied.

2. A driving device according to claim 1, wherein the driving current supplied to said each optical
15 element has the same current value with respect to said each optical element.

3. A driving device according to claim 1, wherein the driving current supply circuit comprises:

a single constant current generating circuit which
20 outputs a constant current having a predetermined current value; and

a plurality of current storage circuits which sequentially receive and hold the constant current and output the driving current on the basis of the constant
25 current.

4. A driving device according to claim 3, wherein the constant current has a current value equal to the

driving current.

5. A driving device according to claim 3, wherein the single constant current generating circuit comprises:

5 a control current generating circuit which generates a control current having a predetermined current value; and

 an output current generating circuit which generates an output current having a predetermined
10 current ratio with respect to the control current, and outputs the output current as the constant current.

6. A driving device according to claim 5, wherein the output current generating circuit comprises a current mirror circuit which has the predetermined
15 current ratio.

7. A driving device according to claim 3, wherein each of the current storage circuit comprises a pair of current storage sections arranged in parallel, and

20 the driving device comprises a control section which alternately and concurrently performs operation of causing one of the current storage sections to receive the constant current output from the constant current generating circuit and hold a voltage component
25 corresponding to a current value of the constant current and operation of causing the other of the current storage sections to output the driving current

on the basis of the voltage component held in the other current storage section.

8. A driving device according to claim 3, wherein the current storage circuit comprises a voltage
5 component holding section which receives the constant current output from the constant current generating circuit and holds a voltage component corresponding to a current value of the constant current.

9. A driving device according to claim 8, wherein
10 the voltage component holding section comprises a capacitance element in which electric charge corresponding to the constant current is written.

10. A driving device according to claim 9, wherein
the voltage component holding section includes a
15 field-effect transistor which causes the constant current to flow between a source and a drain, and
the capacitance element includes at least
a parasitic capacitance between the source and a gate
of the field-effect transistor, in which a voltage
20 applied between the source and gate of the field-effect transistor and corresponding to the constant current is written.

11. A driving device according to claim 3, wherein
the driving current supply circuit further comprises a
25 single input current storage circuit which is provided between the constant current generating circuit and said plurality of current storage circuits, receives

the constant current output from the constant current generating circuit, holds a voltage component corresponding to a current value of the constant current, and supplies a current based on the voltage component to said plurality of current storage circuits.

12. A driving device according to claim 11, wherein the input current storage circuit comprises a capacitance element in which electric charges corresponding to the constant current are written as the voltage component.

13. A driving device according to claim 12, wherein

the input current storage circuit comprises a field-effect transistor which causes the constant current to flow between a source and a drain, and

the capacitance element includes at least a parasitic capacitance between the source and a gate of the field-effect transistor, in which a voltage applied between the source and gate of the field-effect transistor and corresponding to the constant current is written.

14. A driving device according to claim 1, wherein the control voltage applying circuit further comprises means for applying a discharge voltage having a voltage value for causing said each optical element to perform discharging operation, after the driving

current is supplied to said each optical element.

15 15. A driving device according to claim 1, further comprising a pulse width control circuit which controls a pulse width of the driving current to be applied to said each optical element.

16. A driving device according to claim 15, wherein the pulse width control circuit controls the pulse width of the driving current in accordance with a luminance level component of a display signal.

10 17. A display apparatus which displays image information by supplying a driving current corresponding to a display signal to each of a plurality of current-driven display elements of a display panel, comprising:

15 a display panel including a plurality of signal lines and a plurality of scanning lines intersecting at right angles, said plurality of display elements being arranged near intersections of the signal lines and the scanning lines;

20 a scanning control circuit which sequentially scans the scanning lines to sequentially set the display elements connected to the scanning lines in a selected state; and

25 a signal control circuit including at least a driving current supply circuit which supplies a driving current to said each signal line for a predetermined period, and a control voltage applying

circuit which applies, to said each signal line,
a charge voltage having a voltage value based on
a voltage applied to said each display element upon
application of the driving current, before supply of
5 the driving current.

18. A display apparatus according to claim 17,
wherein the driving current supplied to said each
signal line of the display panel has the same current
value for said each signal line.

10 19. A display apparatus according to claim 17,
wherein the signal control circuit comprises at least
a control section which performs supply of the driving
current by the driving current supply circuit and
application of the charge voltage by the control
15 voltage applying circuit in accordance with a timing at
which the scanning control circuit sets the display
element in a selected state.

20 20. A display apparatus according to claim 17,
wherein the charge voltage has at least a voltage value
which is higher than a threshold voltage for said each
display element of the display panel and smaller than
a maximum value of a voltage value applied to said each
display element when the driving current is supplied to
said each display element through said each signal
25 line.

21. A display apparatus according to claim 20,
wherein the charge voltage has a voltage value equal to

an average value of voltage values applied to the respective display elements when the driving current is supplied to the respective display elements through the respective signal lines.

5 22. A display apparatus according to claim 17, wherein the display element comprises optical elements.

 23. A display apparatus according to claim 22, wherein each of the optical elements comprises an organic electroluminescence element, the organic
10 electroluminescence element having an anode electrode connected to the signal line, and a cathode electrode connected to the scanning line.

 24. A display apparatus according to claim 17, wherein the driving current supply circuit in the
15 signal control circuit comprises:

 a single constant current generating circuit which outputs a constant current having a predetermined current value; and

 a plurality of current storage circuits which are
20 provided in correspondence with said plurality of signal lines, sequentially receive and hold the constant current, and simultaneously output the driving currents to said plurality of signal lines on the basis of the constant current.

25 25. A display apparatus according to claim 24, wherein the constant current has a current value equal to that of the driving current.

26. A display apparatus according to claim 24,
wherein the constant current generating circuit
comprises:

5 a control current generating circuit which
generates a control current having a predetermined
current value; and

an output current generating circuit which
generates an output current having a predetermined
current ratio with respect to the control current, and
10 outputs the output current as the constant current.

27. A display apparatus according to claim 26,
wherein the output current generating circuit comprises
a current mirror circuit having the predetermined
current ratio.

15 28. A display apparatus according to claim 24,
wherein

said each current storage circuit comprises a pair
of current storage sections arranged in parallel, and

the driving device comprises a control section
20 which alternately and concurrently performs operation
of causing one of the current storage sections to
receive the constant current output from the constant
current generating circuit and hold a voltage component
corresponding to a current value of the constant
25 current and operation of causing the other of the
current storage sections to output the driving current
on the basis of the voltage component held in the other

current storage section.

29. A display apparatus according to claim 24,
wherein the current storage circuit comprises a voltage
component holding section which receives the constant
5 current output from the constant current generating
circuit and holds a voltage component corresponding to
a current value of the constant current.

30. A display apparatus according to claim 29,
wherein the voltage component holding section comprises
10 a capacitance element in which electric charge
corresponding to the constant current is written.

31. A display apparatus according to claim 30,
wherein

the voltage component holding section comprises
15 a field-effect transistor which causes the constant
current to flow between a source and a drain, and

the capacitance element includes at least
a parasitic capacitance between the source and a gate
of the field-effect transistor, in which a voltage
20 applied between the source and gate of the field-effect
transistor and corresponding to the constant current is
written.

32. A display apparatus according to claim 24,
wherein the driving current supply circuit further
25 comprises a single input current storage circuit which
is provided between the constant current generating
circuit and said plurality of current storage circuits,

receives the constant current output from the constant current generating circuit, holds a voltage component corresponding to a current value of the constant current, and supplies a current based on the voltage component to said plurality of current storage
5 circuits.

33. A display apparatus according to claim 32, wherein the input current storage circuit comprises a capacitance element in which electric charges
10 corresponding to the constant current are written as the voltage component.

34. A display apparatus according to claim 33, wherein

the input current storage circuit comprises
15 a field-effect transistor which causes the constant current to flow between a source and a drain, and the capacitance element includes at least a parasitic capacitance between the source and a gate of the field-effect transistor, in which a voltage
20 applied between the source and gate of the field-effect transistor and corresponding to the constant current is written.

35. A display apparatus according to claim 24, wherein at least said plurality of current storage
25 circuits in the signal control circuit are formed on at least one semiconductor chip.

36. A display apparatus according to claim 35,

wherein the constant current generating circuit is formed on a semiconductor chip different from the semiconductor chip.

37. A display apparatus according to claim 35,
5 wherein the constant current generating circuit is formed in the semiconductor chip.

38. A display apparatus according to claim 17,
wherein the control voltage applying circuit in the signal control circuit further comprises means for
10 applying, to said each signal line, a discharge voltage having a voltage value that causes said each display element to perform discharging operation, after the driving current is supplied to said each signal line.

39. A display apparatus according to claim 38,
15 wherein the discharge voltage has a voltage value which does not exceed a threshold voltage of the display element.

40. A display apparatus according to claim 17,
wherein the signal control circuit further comprises a
20 pulse width control circuit which controls a pulse width of the driving current applied to said each signal line.

41. A display apparatus according to claim 40,
wherein the pulse width control circuit controls the
25 pulse width of the driving current in accordance with a luminance level component of a display signal.

42. A display apparatus according to claim 17,

further comprising means for inhibiting a current from flowing in the display element when the charge voltage is applied from the control voltage applying circuit in the signal control circuit to the display element.

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43. A display apparatus according to claim 17, wherein the scanning control circuit comprises means for applying, to all the scanning lines, a charge control voltage having a voltage value which inhibits
10 a current from flowing in the display element, during a period in which the charge voltage is applied from the control voltage applying circuit in the signal control circuit to said each signal line.

44. A display apparatus according to claim 43,
15 wherein the charge control voltage has a voltage value higher than a voltage obtained by subtracting a threshold voltage of the display element from the charge voltage.

45. A display apparatus according to claim 17,
20 wherein the scanning control circuit comprises means for applying, to the scanning line to which the display element is connected, a driving control voltage having a voltage value which causes the driving current to flow in the display element, during a period in which
25 the driving current is supplied from the driving current supply circuit of the signal control circuit to said each signal line.

46. A display apparatus according to claim 45, wherein the driving control voltage is set to ground potential.

47. A driving method for a driving device which
5 supplies a current to a plurality of current-driven optical elements to drive the optical elements, comprising:

supplying a driving current to said each optical element for a predetermined period; and

10 applying a charge voltage having a voltage value based on a voltage to be applied to said each optical element by application of the driving current, before the driving current is supplied.

48. A driving method for a driving device
15 according to claim 47, further comprising applying, to the optical element, a discharge voltage having a voltage value which causes said each optical element to perform discharging operation, after the driving current is supplied to said each optical element.

20 49. A driving method for a driving device according to claim 47, wherein supplying the driving current comprises:

generating a constant current having a predetermined current value using a single constant
25 current generating circuit, and outputting the current to a plurality of current storage circuits;

sequentially receiving and holding the constant

current in said each current storage circuit; and

applying the driving current from said each
current storage circuit to said each optical element
(OEL) on the basis of the constant current held in said
5 each current storage circuit.

50. A driving method for a driving device
according to claim 49, wherein holding the
driving current in said each current storage circuit
and applying the driving current to said each optical
10 element are concurrently executed.

51. A driving method for a driving device
according to claim 49, wherein outputting the constant
current to said each current storage circuit comprises:

receiving and holding, in a single input current
15 storage circuit, a voltage component corresponding to a
current value of the constant current output from the
constant current generating circuit; and

supplying, to said plurality of current storage
circuits, a current based on the voltage component held
20 in the input current storage circuit.